

Utility Patent Application

CONFIDENTIAL INFORMATION

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MULTI-PART, AIMING POOL CUE COMBINATION AND METHOD OF MANUFACTURING AND USING THE SAME

RELATED APPLICATIONS

The present invention was first described in Disclosure Document No. 470,982, filed March 17, 2000. There are no previously filed, nor currently any co-pending applications, anywhere in the world.

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BACKGROUND OF THE INVENTION

1. Field of the Invention

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The present invention relates to pool cues for use in playing the game of billiard and, more particularly, to a pool cue having two removable, interchangeable striking tips, one tip modified to contain a beam generation

means to aid in targeting whether the pool cue is disposed at a proper position and angle.

2. Description of the Related Art

Billiards continually ranks among the most popular of the recreational or sporting activities that many people enjoy. Ranging in intensity from the casual types that shoot pool periodically to the serious shooters that play several times a week, thousands of people play pool on a daily basis. As with common with all sports and hobbies, the participant strives for continual improvement and refinement. While practice and coaching from more advanced players will certainly help in this regard, there is lack of products on the market to help the pool player. This is in stark contrast to other sports such as golf, baseball, soccer, football and the like whose products and training aids fill virtually all sporting goods stores.

More directly, aiming is required in every shot in billiards or pocket billiards. In pocket billiards, the cue propels the cue ball at a first target ball in order to direct the target ball in a certain path either directly or indirectly toward a pocket while trying to avoid scratching, i.e. entry of the cue ball into a pocket. The trajectory of the target ball and the cue ball are both controlled by the

manner in which the cue stick contacts the cue ball. The spot at which the cue stick hits the cue ball determines its spin during and after contact with the target ball. For example, if the point of the cue stick contacts the cue ball below its mid point, reverse spin is applied to the cue ball and it will tend to return toward the cue stick after contacting the target ball.

Conversely, if the spot at which the cue stick contacts the cue ball is above and mid point of the sphere, forward spin is applied to the ball and it will tend to follow the target ball after contact therewith. Similarly, right-hand and left-hand spin can then be applied to the cue ball by choosing a contact spot to the left or the right of a vertical plane through the mid-point of the cue ball.

It is very rare to find any play situation in which the pocket, target ball and cue ball are all positioned in a straight line. This is the simplest aiming combination in which the player attempts to propel the cue ball in a straight line at the target ball which after impact rolls in a straight line into the pocket. In all other cases, the cue ball and target ball are out-of-line and the target ball must be contacted with the cue ball from a very acute angle on one edge of the target ball to a very acute angle on the other edge to propel the target ball over almost 180° of different lines of motion.

Another necessary skill that is common to both billiards and pocket

billiards is the design and execution of banking shots. Banking requires traverse
of the cue ball and/or target ball against at least one cushion before the ball
comes to rest or enters a pocket. Many times the ball will contact three or four
cushions and each time at a different angle. These shots are very hard to plan
and to aim, especially if the table is crowded with many balls as it is at the start
5 of a rack.

Another way to estimate the pattern of travel of a ball during banking is to
use diamond shaped marks spaced along the table rail behind the cushions and
mentally project the point of contact of the ball between adjacent diamonds. Of
course, a mechanical, mathematical device such as a protractor could be used to
estimate or calculate the angle of travel.

A problem in aiming is that the player is positioned a substantial distance
behind the cue ball and is sighting along a long cylindrical surface toward a
spherical surface. It is difficult to align the cylindrical cue stick with the spherical
15 cue ball, since there are no sharp points or edges for sighting. Secondly, the
pointer spot of contact is usually hidden or obliterated by the cue stick itself.

A search of the prior art did not disclose any patents that read directly on
the claims of the instant invention; however, the following references were
considered related.

The following patents disclose a pool cue stick with a guiding rib.

U.S. Patent no. 5,704,842 issued in the name of *Petrusek*
U.S. Patent no. 3,389,911 issued in the name of *Castiglione*

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The following patents describe a pool cue alignment device with a laser mounted to the shaft.

U.S. Patent no. 5,554,075 issued in the name of *Glazer*
U.S. Patent no. 4,688,796 issued in the name of *Wright*

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U.S. Patent no. 5,558,584 issued in the name of *Brown* discloses a pool cue with a sight or aiming aid.

U.S. Patent no. 5,275,398 issued in the name of *Compton* describes an apparatus for use with a billiard table including a stick assembly and arrays of light reflectors.

U.S. Patent no. 5,181,718 issued in the name of *Valentine* discloses a pool stick mounted in a biased relationship within a rifle stock.

U.S. Patent no. 4,178,694 issued in the name of *Bonney* describes a point-of-aim indicator for the game of billiards.

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And, U.S. Patent no. D 378,393 issued in the name of *Marshall et al.* discloses the ornamental design for a billiard table aiming system.

Of considerable relevance is U.S. Patent No. 4,688,796, issued in the name of *Wright*. However, while the user of a collimated light source in combination with a pool cue stick is incorporated into this invention in combination, other elements are designed to overcome many problems that result from such a device as described in *Wright*. For example, such a device anticipates a central shaft, creating a hollow pool stick that would lack in weight, balance, and strength. Also, the battery power source being in the striking tip of the stick would also cause problems with weight, balance, and strength of the stick. Finally, such a device would be ineffective during the initial "break" of a billiards game, as well as potentially being subjected to damage due to the shock or jolt of such a strike.

Accordingly, and in keeping with advanced technology, there is a continual need for new and innovative features and improvements that will serve to enhance the game of billiards.

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SUMMARY OF THE INVENTION

Therefore, it is an object of the invention to provide for pool cue having two removable, interchangeable striking tips,

It is a feature of the present invention that one such striking tip is modified

to contain a collimated light beam generation means to aid in targeting whether the pool cue is disposed at a proper position and angle.

Briefly described according to one embodiment of the present invention, a
5 pool stick is provided with an integral laser aiming device for use in playing
billiards. Upon initial observation, the invention resembles a conventional pool
stick, but upon closer examination, a small hole can be viewed in the end of the
pool stick away from the handle. A low power laser, similar to that used in a
laser pointer for business presentations, is installed in the end of the pool cue
and projecting out the small opening. The laser light axis is in perfect alignment
with the centerline of the pool cue. A set of small wires, embedded or concealed
in the pool stick carries power from a battery or batteries and a switch in the
handle of the invention to the laser in the opposite end. The switch is a normally
open, spring return type of switch that allows current to flow only when the switch
is being pressed. To use the invention, the user lines up the stick behind the cue
ball in the conventional manner. The tip of the stick is then raised slightly above
the ball and aimed at the ball that the user desires to hit. The switch is then
pressed and the user then aligns the laser dot on the subject ball by moving the
handle, while holding the tip in a relatively constant position. When the user is

happy with the shot, the handle is held in that position, the tip is lowered back down and the shot is completed in the normal manner. The invention is a three-piece design that allows the user to take it apart for transportation ease. The electrical connections would be made using internal electrical connectors that automatically make and break electrical current flow when the invention is assembled and disassembled. Additionally, the upper end of the cue stick with the laser is replaceable with a conventional end during break shots so the laser is not subjected to high forces and possible damage during such shots.

The use of the present invention allows billiard players the opportunity to improve their game in a manner which employs high technology in a fun, easy and efficient manner.

BRIEF DESCRIPTION OF THE DRAWINGS

The advantages and features of the present invention will become better understood with reference to the following more detailed description and claims taken in conjunction with the accompanying drawings, in which like elements are identified with like symbols, and in which:

FIG. 1 is an exploded perspective view of a multi-part, aiming pool cue combination in accordance with the preferred embodiment of the present

invention;

FIG. 2 is an enlarged detail in perspective of the handle of the pool cue of FIG. 1;

FIG. 3 is a view in section taken along the line III-III of FIG. 2;

5 FIG. 4 is a view in section taken along the line IV-IV of FIG. 2;

FIG. 5 is a view in section taken along line V-V of FIG. 1;

FIG. 6 is a view in section taken along line VI-VI of FIG. 1;

FIG. 7 is a top plan view of a pocket billiard table;

FIG. 8 is a view in section taken along the line VII-VII of FIG. 7 showing the aiming system of the present invention incorporated therein.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

1. Detailed Description of the Figures

Referring now to FIGS. 1-6, a multi-part pool cue combination 10 is composed of a base handle portion 12, an a pair of removable tip portions 14 for interchangeably affixing to the distal end of the handle 12. The removable tips portions 14 include the combination of a breaking tip 14a and an aiming tip 14b.

In greater detail as shown in FIG. 2-4, the handle 12 forms a shaft that has a cylindrical cross section which gently tapers from the handle 16 toward a

tip portion 14. At the proximal end of the handle 12 (FIG. 3), a resilient bumper 15 can be removably attached to the handle end of the cue, and provides access to a centrally bored chamber formed in the shaft 12 and forming a battery compartment 20. A threaded opening 26 which receives a threaded stud 28.

5 The stud 28 is also received into a threaded bore 30 in the rearward end of the handle portion 12. The threaded stud 28 can also serve as one electrical connector, as will be described further below. The stud 28 extends into the battery compartment 20 and contacts the upper terminal base 38 of the battery 40. A spring 43 mounted over the lower end 42 of the batteries 40 to provide a resilient force on the battery 40. A first electrical 48a conductor and a second electrical conductor 48b, in electrical connection with the upper terminal base 38 and lower terminal base 42 of the batteries 40, respectively, penetrate the sidewall of the battery compartment 20 through a pair of conductor orifices 49, and are guided down the shaft through a conductor guiding channel 50.

15 At the distal end of the handle 12 (FIG. 4) a tip receiving socket is formed in the shaft 12 and forming a connection compartment 52 for receiving one of the two tip portions 14. The first electrical conductor 48a passed through the conductor guiding channel 50 and is in electrical communication with a conductive washer 54 that terminates the tip end of the shaft 12, and functions

as a first conductor attachment point as will be described below. The second electrical conductor 48b also passed through the conductor guiding channel 50 and is in electrical connection with a second conductor attachment point by penetrate the sidewall of the tip receiving compartment through a conductor orifices 56.

Referring now to FIG. 5, a breaking tip 14a is shown for removable, threaded attachment to the tip receiving socket such at to provide a rigid mechanical connection to the shaft handle 12. In this manner, the multi-part pool cue combination 10 can then be used as any otherwise conventional pool cue. It is anticipated that in this configuration, the cue combination 10 would be used during the initial "breaking" of the "racked" pool balls during a game of pocket billiards or the like. The threaded opening 52 receives a threaded stud 58. The stud 58 is also received into a threaded bore in the rearward end of the tip portion 14a formed as a tapered, solid member having a cylindrical cross section which gently tapers from the handle toward a tip portion, and is terminated by a striking surface 60. Conventionally, the striking surface is formed of a leather disc coated on the exterior tip with chalk.

Referring now to FIG. 6, an aiming tip 14b is shown for removable, threaded attachment to the tip receiving socket such at to provide a rigid

mechanical connection to the shaft handle 12. The threaded opening 52 receives a threaded stud 68. The stud 68 is also received into a threaded bore in the rearward end of the tip portion 14b and provides access to a centrally bored chamber formed in the aiming tip 14b and forming an aiming laser compartment

5 70. The tip portion 14b is formed as a tapered member having a cylindrical cross section which gently tapers from the handle toward a tip portion, and is terminated by a striking surface 60. The threaded stud 68 forms a central conduit through which a third electrical conductor 49c can pass, and a forth electrical conductor 49d is further in contact with and communicates between the mating surface 72 of the base of the tip 14b that contacts the conductive washer 54 that terminates the tip end of the shaft 12, and the aiming laser compartment 70. A collimated light source 74, such as a conventionally available laser pointer, is placed within the aiming laser compartment 70, and is in electrical communication with the conductors 49c, 49d, and thereby is powered by the 15 batteries 40 in the handle when the tip 14b is secured to the handle 12. A light orifice 76 is formed at the tip, through the striking surface 60, to provide access to the compartment 70 and allow beaming of a collimated light source directly from the distal end of the aiming tip 14b, and the beam passes through a cylindrical opening in the resilient tip member as a highly collimated, narrow

directional beam which is directed onto a spot on a cue ball or other billiard ball or pool ball.

The cue stick 10 can also be utilized in conjunction with reflectorized bumpers as shown in FIGS. 7 and 8. A conventional pool table 200 includes a bed 202 of a hard but somewhat resilient material such as slate or marble in rectangular shape covered by a soft playing surface such as a layer 204 of felt. A raised perimeter is formed by a set of four rails 206. End pockets 208 are provided at the intersections of the side and end rails and side pockets 209 are provided at the midpoints of the side rails. The inner surface of the rails is provided with a set of bumpers 210 in the form of an inwardly facing triangle terminating in an apex 212 forming an overhang 214. The bumpers 210 may also be covered with a layer 216 of felt. A reflector system is formed in accordance with the invention by mounting a vertical reflector or mirror strip 220 within the overhang and beyond the point at which the apex 212 will be compressed during contact with the cue ball or other ball.

The strip 220 may be mounted on a triangular block 222 of resilient material which may be temporarily placed under each overhang 214. The strips may be secured by strips of interlocking fabric such as velcro. Six removable blocks 222 are required in order to form a complete reflectorized system for a

pocket billiard table. Only four blocks 222 would be required for a regular billiard table.

Referring now to FIG. 7, the cue stick 10 is placed on the rail 206. When the cue is in position 223 or 224, it will project a bank shot 226 or 228 into corner pockets 203. However, when the cue is in position 230 or 232, aiming patterns 236 and 238 will be projected showing that the cue ball will not enter any pocket.

The cue stick of the invention can contain other mechanisms. For example, the cue stick can have types of switching mechanisms such as pulse-type or relay type mechanisms that do not require constant pressure on the switch or button.

2. Method of Manufacture of the Preferred Embodiment

The multi-part pool cue combination 10 as described above embodies a number of improvements and features not otherwise available in the art. Illustrative, but not exhaustive, of this is that such a multi-part pool cue combination can be manufactured using a conventional multi part pool cue as an initial material. Utilizing a handle with two separate tips, the battery storage cavity can be formed in the handle, with the linear conductor guiding channel formed along the outer radial length thereof. Electrical conductors can then be

included therein for communication of electrical current from the handle to the tip, and then the battery compartment structural elements can be added to complete the handle portion. One tip can be used without modification to form the breaking tip, and the second tip can be easily formed into the aiming tip by formation of the laser receiving cavity and inclusion of the collimated light source therein.

3. Operation of the Preferred Embodiment

In operation, the present invention is can be used in many ways. Primarily, by attaching the breaking tip 14a to the base handle portion 12, the cue 10 can be used for the initial "break" portion of conventional pocket billiards. Thereafter, the breaking tip 14a can be unthreaded, and replaced by the aiming tip 14b. Upon subsequent strikes at the cue ball, an aiming light can thereafter be generated from the distal end of the pool stick 10 as described above.

Further, the present invention can be used as a training an practice item. With the aiming tip 14b in place upon the handle 12, the cue stick can then be aligned behind a cue ball with the collimated light source shining onto the surface of the ball. As the user moves the cue stick back and forth, the dot of light on the ball should remain neat the same spot at all times, with only slight up

and down motion. However, if the dot of light moves excessively, or in random directions, then the user can practice the proper drawing of the stroke, keeping a smooth pendulum action as a result of this visual feedback.

Alternately, availability and use of the present invention can allow for unconventional play with pocket billiards as well. For example, use of flourescent colored balls, and in combination with black lighting can allow for playing variations of pocket billiards in the dark while still allowing the user to utilize his or her aiming skills. And, in combination with a table having reflectorized bumpers as described above, and in further combination with the use of a fog generating means, various visual reflective effects can be generated.

As designed, a device embodying the teachings of the present invention is easily applied. The foregoing description is included to illustrate the operation of the preferred embodiment and is not meant to limit the scope of the invention.

As one can envision, an individual skilled in the relevant art, in conjunction with the present teachings, would be capable of incorporating many minor modifications that are anticipated within this disclosure. Therefore, the scope of the invention is to be broadly limited only by the following claims.